Amendments to the Specification 3/31/2006

All amendments to the specification without new matter are list below for the reissue.

1. In the first page under the title of "ABSTRACT" in the printed patent

Key technologies have been developed in realizing single longitudinal mode CW operation with a regular standing-wave cavity for intracavity frequency doubling and intracavity frequency conversions, so as to produce all solid-state, true cw devices with operation over wide spectral ranges including green, blue and UV. In one laser arrangement [method], a beam expander [~~(23 or 41)~~] is applied to render a large mode waist and an improved beam divergence so as to greatly reduce the insertion losses for intracavity optical elements [~~(17, 18 or 44)~~]. In another laser arrangement [method], when spatial interference [hole burning] effect is minimized by using [~~a pump head (12) with~~] a thin gain zone [(2)] in contact with an end cavity mirror, then a low resolving-power spectral filter with low loss can be utilized. ~~In addition, several novel optical multipass constructions, typically by use of total internal reflection, have also been devised for pumping laser chips, laser rods, laser slabs, and for the use of multipass optical amplifier and pumping fiber lasers.~~

- *Explanation for the Change:*

All changes made here coincide with the relevant changes in claims. The term of "spatial interference effect" to replace the term of "spatial hole-burning effect" will be more precise in laser physics. Further, the matter related to the deletions was not elected for the patent.

2. Around line 20 of column 1 under the title of "FIELD OF INVENTION" in the printed patent with double column format

This invention relates generally to laser ~~pump/cavity/amplifier~~ configuration design, and more particularly to laser arrangement for realizing single longitudinal mode operation and intracavity frequency conversions for [diode-pumped] solid-state lasers[~~, as well as optical multipass constructions for pumping laser media and fiber lasers, and for the use of multipass optical amplifier~~].

- *Explanation for the Change:*

The matter related to the deletions here was not elected for the patent.

3. Around line 25/40 of column 1 under the title of "BACKGROUND OF INVENTION" in the printed patent with double column format

Since the so-called "green problem" was discovered by T. Baer in 1986, it has become well known and has long plagued the stability of the CW intracavity harmonic generation of diode-pumped solid-state (DPSS) lasers. The essential difficulty in solving the "green problem" results from that, there is a persistent obstacle in effectively obtaining single longitudinal mode CW operation due to the spatial interference [hole-burning] effect in solid-state lasers. The related critical design issues are extremely tough. For the past decade, much research has attempted to solve this problem to obtain stable green light. Almost every effort has been made and nearly every way has been tried. However, none of true CW devices or designs has been successful by far with a regular standing-wave cavity. Only ring or very short cavity configurations have been used for this purpose, but they have appreciable inconveniences and limitations.

4. Around line 60/65 of column 1 in the printed patent with double column format

Controlling spatial hole burning can greatly reduce the possibility of amplitude oscillations. However, weak residual spatial hole burning resulted from imperfect "twisted mode" operation can still cause oscillations. In spite of those intense efforts, there remains a determining approach required to achieve dynamically stable single-mode operation with the use of a regular standing-wave cavity [~~when the spatial hole-burning effect is present~~]. What is needed is to provide a powerful form of wavelength selectivity to clamp the peak position of the operating frequency and prevent the laser operation from mode hopping and shifting to wavelengths outside the phase matching curve while controlling appreciable losses to the system.

- *Explanation for the Change:*

For a standing-wave laser cavity there always exists standing-wave patterns in the optical intensity. The interaction between those patterns and laser gain medium always produces spatial interference (hole-burning) effect.

5. Around line 65 of column 2 in the printed patent with double column format

(2) A pump head with a thin gain zone is applied to create a circumstance to promote single-longitudinal-mode operation [~~minimize the spatial hole-burning effect~~]. The effect caused by a thin gain region is equivalent to that caused by short cavity configurations in which longitudinal modes are separated substantially, so that the required resolving-power of a frequency-selective form will be largely relaxed, and it becomes possible to use a spectral filter with low insertion losses, such as a birefringent filter or a low-finesse etalon, in realizing single-mode operation.

- *Explanation for the Change:*

Please refer to [Fact 4] in Statement of Status/Support for all Changes to the Claims.

6. Around line 60/65 of column 9 under the title of "DESCRIPTION" in the printed patent

There are two major goals in the present invention. One goal is to realize dynamically stable single-mode or narrowband operation with a regular standing-wave cavity for [diode-pumped] solid-state lasers leading to overcoming the difficulty in intracavity frequency conversions, typically in frequency doubling that is often caused by the so-called "green problem". The other is to provide several similar compact cavity designs to achieve mode-matched pumping, compensation of the thermal lens effect, good beam quality, high power operation and efficient frequency conversions.

- *Explanation for the Change:*

Here it is not necessary to put the words of "diode-pumped."